UNITED NATIONS **A**

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Forty-seventh session
Agenda item 71

RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

[on the report of the Special Political Committee (A/47/609)]

47/66. Effects of atomic radiation

The General Assembly,

Recalling its resolution 913 (X) of 3 December 1955, by which it established the United Nations Scientific Committee on the Effects of Atomic Radiation, and its subsequent resolutions on the subject, including resolution 46/44 of 9 December 1991, in which, inter alia, it requested the Scientific Committee to continue its work,

Taking note with appreciation of the report of the United Nations Scientific Committee on the Effects of Atomic Radiation, 1/

Reaffirming the desirability of the Scientific Committee continuing its work,

Concerned about the potentially harmful effects on present and future generations resulting from the levels of radiation to which man is exposed,

Conscious of the continued need to examine and compile information about atomic and ionizing radiation and to analyse its effects on man and his environment,

Bearing in mind the decision of the Scientific Committee to submit, as soon as the relevant studies are completed, shorter reports with supporting scientific documents on the specialized topics mentioned by the Committee, 2/

1/ A/47/293.

2/ A/38/142, para. 5.

/...

1. Commends the United Nations Scientific Committee on the Effects of Atomic Radiation for the valuable contribution it has been making in the course of the past thirty-seven years, since its inception, to wider knowledge and understanding of the levels, effects and risks of atomic radiation and for fulfilling its original mandate with scientific authority and independence of judgement;

2. Notes with satisfaction the continued and growing scientific cooperation between the Scientific Committee and the United Nations Environment Programme;

3. Requests the Scientific Committee to continue its work, including its important coordinating activities, to increase knowledge of the levels, effects and risks of ionizing radiation from all sources;

4. Endorses the intentions and plans of the Scientific Committee for its future activities of scientific review and assessment on behalf of the General Assembly;

5. Also requests the Scientific Committee to continue at its next session the review of the important problems in the field of radiation and to report thereon to the General Assembly at its forty-eighth session;

6. Requests the United Nations Environment Programme to continue providing support for the effective conduct of the work of the Scientific Committee and for the dissemination of its findings to the General Assembly, the scientific community and the public;

7. Expresses its appreciation for the assistance rendered to the Scientific Committee by Member States, the specialized agencies, the International Atomic Energy Agency and non-governmental organizations, and invites them to increase their cooperation in this field;

8. Invites Member States, the organizations of the United Nations system and non-governmental organizations concerned to provide further relevant data about doses, effects and risks from various sources of radiation, which would greatly help in the preparation of future reports of the Scientific Committee to the General Assembly.

85th plenary meeting
14 December 1992

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RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

[on the report of the Special Political Committee (A/47/610)]

47/67. International cooperation in the peaceful uses of outer space

The General Assembly,

Recalling its resolution 46/45 of 9 December 1991,

Deeply convinced of the common interest of mankind in promoting the exploration and use of outer space for peaceful purposes and in continuing efforts to extend to all States the benefits derived therefrom, and of the importance of international cooperation in this field, for which the United Nations should continue to provide a focal point,

Reaffirming the importance of international cooperation in developing the rule of law, including the relevant norms of space law and their important role in international cooperation for the exploration and use of outer space for peaceful purposes,

Gravely concerned about the extension of an arms race into outer space,

Recognizing that all States, in particular those with major space capabilities, should contribute actively to the goal of preventing an arms race in outer space as an essential condition for the promotion of international cooperation in the exploration and use of outer space for peaceful purposes,

Aware of the need to increase the benefits of space technology and its applications and to contribute to an orderly growth of space activities favourable to the socio-economic advancement of mankind, in particular that of the people of developing countries,

Noting with satisfaction that the Committee on the Peaceful Uses of Outer Space, on the basis of the deliberations of its two subcommittees, had endorsed the text of the draft principles relevant to the use of nuclear power sources in outer space, 1/

Considering that space debris is an issue of concern to all nations,

Noting the progress achieved in the further development of peaceful space exploration and application as well as in various national and cooperative space projects, which contribute to international cooperation in this field,

Taking note of the report of the Secretary-General 2/ on the implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, 3/

Having considered the report of the Committee on the Peaceful Uses of Outer Space on the work of its thirty-fifth session, 4/

1. Endorses the report of the Committee on the Peaceful Uses of Outer Space; 4/

2. Invites States that have not yet become parties to the international treaties governing the uses of outer space 5/ to give consideration to ratifying or acceding to those treaties;

3. Notes that, at its thirty-first session, the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, in its working groups, continued its work as mandated by the General Assembly in resolution 46/45; 6/

1/ Official Records of the General Assembly, Forty-seventh Session, Supplement No. 20 (A/47/20), annex.

2/ A/47/383.

3/ See Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 9-21 August 1982 (A/CONF.101/10 and Corr.1 and 2).

4/ Official Records of the General Assembly, Forty-seventh Session, Supplement No. 20 (A/47/20).

5/ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (resolution 2222 (XXI), annex); Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (resolution 2345 (XXII), annex); Convention on International Liability for Damage Caused by Space Objects (resolution 2777 (XXVI), annex); Convention on Registration of Objects Launched into Outer Space (resolution 3235 (XXIX), annex); Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (resolution 34/68, annex).

6/ Official Records of the General Assembly, Forty-seventh Session, Supplement No. 20 (A/47/20), sect. II.C.

4. Endorses the recommendations of the Committee that the Legal Subcommittee, at its thirty-second session, taking into account the concerns of all countries, particularly those of developing countries, should:

(a) Consider, through its working group, the question of early review and possible revision of the principles relevant to the use of nuclear power sources in outer space;

(b) Continue, through its working group, its consideration of matters relating to the definition and delimitation of outer space and to the character and utilization of the geostationary orbit, including consideration of ways and means to ensure the rational and equitable use of the geostationary orbit without prejudice to the role of the International Telecommunication Union;

(c) Continue, through its working group, its consideration of the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and in the interests of all States, taking into particular account the needs of developing countries;

5. Notes that deliberations on the question of the geostationary orbit were undertaken by the Legal Subcommittee, as reflected in its report, 6/ on the basis of recent proposals which might provide a new and enhanced basis for future work;

6. Endorses the recommendations of the Committee concerning the organization of work in the Legal Subcommittee;

7. Notes that the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, at its twenty-ninth session, continued its work as mandated by the General Assembly in its resolution 46/45; 7/

8. Endorses the recommendations of the Committee that the Scientific and Technical Subcommittee, at its thirtieth session, taking into account the concerns of all countries, particularly those of developing countries, should:

(a) Consider the following items on a priority basis:

(i) United Nations Programme on Space Applications and the coordination of space activities within the United Nations system;

(ii) Implementation of the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space; 3/

(iii) Matters relating to remote sensing of the Earth by satellites including, inter alia, applications for developing countries;

(iv) Use of nuclear power sources in outer space;

7/ Ibid., sect. II.B.

(b) Consider the following items:

(i) Questions relating to space transportation systems and their implications for future activities in space;

(ii) Examination of the physical nature and technical attributes of the geostationary orbit; examination of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries;

(iii) Matters relating to life sciences, including space medicine;

(iv) Progress in national and international space activities related to the Earth's environment, in particular progress in the geosphere-biosphere (global change) programme;

(v) Matters relating to planetary exploration;

(vi) Matters relating to astronomy;

(vii) The theme fixed for special attention at the 1993 session of the Scientific and Technical Subcommittee: "Space-based communication: the expansion of current services and increased understanding of new systems and the services they will make possible"; the Committee on Space Research and the International Astronautical Federation, in liaison with Member States, should be invited to arrange a symposium, with as wide a participation as possible, to be held during the first week of the Subcommittee's session, to complement discussions within the Subcommittee on the special theme;

9. Considers, in the context of paragraph 8 (a) (ii) above, that it is particularly urgent to implement the following recommendations:

(a) All countries should have the opportunity to use the techniques resulting from medical studies in space;

(b) Data banks at the national and regional levels should be strengthened and expanded and an international space information service should be established to function as a centre of coordination;

(c) The United Nations should support the creation of adequate training centres at the regional level, linked, whenever possible, to institutions implementing space programmes; necessary funding for the development of such centres should be made available through financial institutions;

(d) The United Nations should organize a fellowship programme through which selected graduates or postgraduates from developing countries should get in-depth, long-term exposure to space technology or applications; it is also desirable to encourage the availability of opportunities for such exposure on other bilateral and multilateral bases outside the United Nations system;

10. Endorses the recommendation of the Committee that the Scientific and Technical Subcommittee should reconvene, at its thirtieth session, the Working Group of the Whole to Evaluate the Implementation of the Recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, to continue its work;

11. Also endorses the recommendations of the Working Group of the Whole of the Scientific and Technical Subcommittee, as endorsed by the Committee and as contained in the report of the Working Group of the Whole; 8/

12. Decides that, during the thirtieth session of the Scientific and Technical Subcommittee, the Working Group on the Use of Nuclear Power Sources in Outer Space should be reconvened, and invites Member States to report to the Secretary-General on a regular basis with regard to national and international research concerning the safety of nuclear-powered satellites;

13. Endorses the United Nations Programme on Space Applications for 1993, as proposed to the Committee by the Expert on Space Applications, 9/ and urges all States to make voluntary contributions to this Programme in order to enhance its effectiveness;

14. Emphasizes the urgency and importance of implementing fully the recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space as early as possible;

15. Reaffirms its approval of the recommendation of the Conference regarding the establishment and strengthening of regional mechanisms of cooperation and their promotion and creation through the United Nations system;

16. Expresses its appreciation to all Governments that have made or expressed their intention to make contributions towards carrying out the recommendations of the Conference;

17. Invites all Governments to take effective action for the implementation of the recommendations of the Conference;

18. Requests all organs, organizations and bodies of the United Nations system and other intergovernmental organizations working in the field of outer space or on space-related matters to cooperate in the implementation of the recommendations of the Conference;

19. Requests the Secretary-General to report to the General Assembly at its forty-eighth session on the implementation of the recommendations of the Conference;

20. Recommends that Member States might discuss, during the next sessions of the Committee under its agenda item entitled "Other matters", the possibility of holding a third United Nations Conference on the Exploration and Peaceful Uses of Outer Space in the future;

8/ A/AC.105/513, annex II.

9/ See A/AC.105/497 and Corr.1, sects. I and III.

21. Also recommends that the United Nations should actively encourage the continuation of activities initiated for International Space Year 1992 and promote broader involvement in those activities by more nations;

22. Notes with interest the plans of the Government of Chile to host the second Space Conference of the Americas, at Santiago, in 1993;

23. Recommends that more attention be paid to all aspects related to the protection and the preservation of the outer space environment, especially those potentially affecting the Earth's environment;

24. Considers that it is essential that Member States pay more attention to the problem of collisions of space objects, including nuclear power sources, with space debris, and other aspects of space debris, and calls for the continuation of national research on this question, for the development of improved technology for the monitoring of space debris and for the compilation and dissemination of data on space debris, and that, to the extent possible, information thereon should be provided to the Scientific and Technical Subcommittee in order to allow it to follow this area more closely;

25. Requests the Secretary-General to invite Member States to provide information on national research on space debris to the Scientific and Technical Subcommittee;

26. Also considers that space debris could be an appropriate subject for in-depth discussion by the Committeein the future;

27. Requests the Secretary-General to prepare, for the next session of the Committee, an analytical report on the role that the Committee could play in view of the decisions and recommendations of the United Nations Conference on Environment and Development 10/ and invites Member States to submit their views in time for inclusion in that report;

28. Urges all States, in particular those with major space capabilities, to contribute actively to the goal of preventing an arms race in outer space as an essential condition for the promotion of international cooperation in the exploration and uses of outer space for peaceful purposes;

29. Takes note of the views expressed during the thirty-fifth session of the Committee and during the forty-seventh session of the General Assembly concerning ways and means of maintaining outer space for peaceful purposes;

30. Requests the Committee to continue to consider, as a matter of priority, ways and means of maintaining outer space for peaceful purposes and to report thereon to the General Assembly at its forty-eighth session;

31. Also requests the Committee to continue to consider, at its thirty-sixth session, its agenda item entitled "Spin-off benefits of space technology: review of current status";

10/ See Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992 (A/CONF.151/26), chap. I, resolution 1, annexes I and II.

32. Requests the specialized agencies and other international organizations to continue and, where appropriate, enhance their cooperation with the Committee and to provide it with progress reports on their work relating to the peaceful uses of outer space;

33. Further requests the Committee to continue its work, in accordance with the present resolution, to consider, as appropriate, new projects in outer space activities and to submit a report to the General Assembly at its forty-eighth session, including its views on which subjects should be studied in the future.

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RESOLUTICN ADOPTED BY THE GENERAL ASSEMBLY

[on the report of the Special Political Committee (A/47/610)]

47/68. Principles Relevant to the Use of Nuclear Power Sources in Outer Space

The General Assembly,

Having considered the report of the Committee on the Peaceful Uses of Outer Space on the work of its thirty-fifth session 1/ and the text of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as approved by the Committee and annexed to its report, 2/

Recognizing that for some missions in outer space nuclear power sources are particularly suited or even essential owing to their compactness, long life and other attributes,

Recognizing also that the use of nuclear power sources in outer space should focus on those applications which take advantage of the particular properties of nuclear power sources,

Recognizing further that the use of nuclear power sources in outer space should be based on a thorough safety assessment, including probabilistic risk analysis, with particular emphasis on reducing the risk of accidental exposure of the public to harmful radiation or radioactive material,

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1/ Official Records of the General Assembly, Forty-seventh Session, Supplement No. 20 (A/47/20).

2/ Ibid., annex.

Recognizing the need, in this respect, for a set of principles containing goals and guidelines to ensure the safe use of nuclear power sources in outer space,

Affirming that this set of Principles applies to nuclear power sources in outer space devoted to the generation of electric power on board space objects for non-propulsive purposes, which have characteristics generally comparable to those of systems used and missions performed at the time of the adoption of the Principles,

Recognizing that this set of Principles will require future revision in view of emerging nuclear power applications and of evolving international recommendations on radiological protection,

Adopts the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as set forth below.

Principle 1. Applicability of international law

Activities involving the use of nuclear power sources in outer space shall be carried out in accordance with international law, including in particular the Charter of the United Nations and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. 3/

Principle 2. Use of terms

1. For the purpose of these Principles, the terms "launching State" and "State launching" mean the State which exercises jurisdiction and control over a space object with nuclear power sources on board at a given point in time relevant to the principle concerned.

2. For the purpose of principle 9, the definition of the term "launching State" as contained in that principle is applicable.

3. For the purposes of principle 3, the terms "foreseeable" and "all possible" describe a class of events or circumstances whose overall probability of occurrence is such that it is considered to encompass only credible possibilities for purposes of safety analysis. The term "general concept of defence-in-depth" when applied to nuclear power sources in outer space refers to the use of design features and mission operations in place of or in addition to active systems, to prevent or mitigate the consequences of system malfunctions. Redundant safety systems are not necessarily required for each individual component to achieve this purpose. Given the special requirements of space use and of varied missions, no particular set of systems or features can be specified as essential to achieve this objective. For the purposes of paragraph 2 (d) of principle 3, the term "made critical" does not include actions such as zero-power testing which are fundamental to ensuring system safety.

3/ Resolution 2222 (XXI), annex.

Principle 3. Guidelines and criteria for safe use

In order to minimize the quantity of radioactive material in space and the risks involved, the use of nuclear power sources in outer space shall be restricted to those space missions which cannot be operated by non-nuclear energy sources in a reasonable way.

1. General goals for radiation protection and nuclear safety

(a) States launching space objects with nuclear power sources on board shall endeavour to protect individuals, populations and the biosphere against radiological hazards. The design and use of space objects with nuclear power sources on board shall ensure, with a high degree of confidence, that the hazards, in foreseeable operational or accidental circumstances, are kept below acceptable levels as defined in paragraphs 1 (b) and (c).

Such design and use shall also ensure with high reliability that radioactive material does not cause a significant contamination of outer space.

(b) During the normal operation of space objects with nuclear power sources on board, including re-entry from the sufficiently high orbit as defined in paragraph 2 (b), the appropriate radiation protection objective for the public recommended by the International Commission on Radiological Protection shall be observed. During such normal operation there shall be no significant radiation exposure.

(c) To limit exposure in accidents, the design and construction of the nuclear power source systems shall take into account relevant and generally accepted international radiological protection guidelines.

Except in cases of low-probability accidents with potentially serious radiological consequences, the design for the nuclear power source systems shall, with a high degree of confidence, restrict radiation exposure to a limited geographical region and to individuals to the principal limit of 1 mSv in a year. It is permissible to use a subsidiary dose limit of 5 mSv in a year for some years, provided that the average annual effective dose equivalent over a lifetime does not exceed the principal limit of 1 mSv in a year.

The probability of accidents with potentially serious radiological consequences referred to above shall be kept extremely small by virtue of the design of the system.

Future modifications of the guidelines referred to in this paragraph shall be applied as soon as practicable.

(d) Systems important for safety shall be designed, constructed and operated in accordance with the general concept of defence-in-depth. Pursuant to this concept, foreseeable safety-related failures or malfunctions must be capable of being corrected or counteracted by an action or a procedure, possibly automatic.

The reliability of systems important for safety shall be ensured, inter alia, by redundancy, physical separation, functional isolation and adequate independence of their components.

Other measures shall also be taken to raise the level of safety.

2. Nuclear reactors

(a) Nuclear reactors may be operated:

(i) On interplanetary missions;

(ii) In sufficiently high orbits as defined in paragraph 2 (b);

(iii) In low-Earth orbits if they are stored in sufficiently high orbits after the operational part of their mission.

(b) The sufficiently high orbit is one in which the orbital lifetime is long enough to allow for a sufficient decay of the fission products to approximately the activity of the actinides. The sufficiently high orbit must be such that the risks to existing and future outer space missions and of collision with other space objects are kept to a minimum. The necessity for the parts of a destroyed reactor also to attain the required decay time before re-entering the Earth's atmosphere shall be considered in determining the sufficiently high orbit altitude.

(c) Nuclear reactors shall use only highly enriched uranium 235 as fuel. The design shall take into account the radioactive decay of the fission and activation products.

(d) Nuclear reactors shall not be made critical before they have reached their operating orbit or interplanetary trajectory.

(e) The design and construction of the nuclear reactor shall ensure that it can not become critical before reaching the operating orbit during all possible events, including rocket explosion, re-entry, impact on ground or water, submersion in water or water intruding into the core.

(f) In order to reduce significantly the possibility of failures in satellites with nuclear reactors on board during operations in an orbit with a lifetime less than in the sufficiently high orbit (including operations for transfer into the sufficiently high orbit), there shall be a highly reliable operational system to ensure an effective and controlled disposal of the reactor.

3. Radioisotope generators

(a) Radioisotope generators may be used for interplanetary missions and other missions leaving the gravity field of the Earth. They may also be used in Earth orbit if, after conclusion of the operational part of their mission, they are stored in a high orbit. In any case ultimate disposal is necessary.

(b) Radioisotope generators shall be protected by a containment system that is designed and constructed to withstand the heat and aerodynamic forces of re-entry in the upper atmosphere under foreseeable orbital conditions, including highly elliptical or hyperbolic orbits where relevant. Upon impact, the containment system and the physical form of the isotope shall ensure that no radioactive material is scattered into the environment so that the impact area can be completely cleared of radioactivity by a recovery operation.

Principle 4. Safety assessment

1. A launching State as defined in principle 2, paragraph 1, at the time of launch shall, prior to the launch, through cooperative arrangements, where relevant, with those which have designed, constructed or manufactured the nuclear power source, or will operate the space object, or from whose territory or facility such an object will be launched, ensure that a thorough and comprehensive safety assessment is conducted. This assessment shall cover as well all relevant phases of the mission and shall deal with all systems involved, including the means of launching, the space platform, the nuclear power source and its equipment and the means of control and communication between ground and space.

2. This assessment shall respect the guidelines and criteria for safe use contained in principle 3.

3. Pursuant to article XI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, the results of this safety assessment, together with, to the extent feasible, an indication of the approximate intended time-frame of the launch, shall be made publicly available prior to each launch, and the Secretary-General of the United Nations shall be informed on how States may obtain such results of the safety assessment as soon as possible prior to each launch.

Principle 5. Notification of re-entry

1. Any State launching a space object with nuclear power sources on board shall in a timely fashion inform States concerned in the event this space object is malfunctioning with a risk of re-entry of radioactive materials to the Earth. The information shall be in accordance with the following format:

(a) System parameters:

(i) Name of launching State or States, including the address of the authority which may be contacted for additional information or assistance in case of accident;

(ii) International designation;

(iii) Date and territory or location of launch;

(iv) Information required for best prediction of orbit lifetime, trajectory and impact region;

(v) General function of spacecraft;

(b) Information on the radiological risk of nuclear power source(s):

(i) Type of nuclear power source: radioisotopic/reactor;

(ii) The probable physical form, amount and general radiological characteristics of the fuel and contaminated and/or activated components likely to reach the ground. The term "fuel" refers to the nuclear material used as the source of heat or power.

This information shall also be transmitted to the Secretary-General of the United Nations.

2. The information, in accordance with the format above, shall be provided by the launching State as soon as the malfunction has become known. It shall be updated as frequently as practicable and the frequency of dissemination of the updated information shall increase as the anticipated time of re-entry into the dense layers of the Earth's atmosphere approaches so that the international community will be informed of the situation and will have sufficient time to plan for any national response activities deemed necessary.

3. The updated information shall also be transmitted to the Secretary-General of the United Nations with the same frequency.

Principle 6. Consultations

States providing information in accordance with principle 5 shall, as far as reasonably practicable, respond promptly to requests for further information or consultations sought by other States.

Principle 7. Assistance to States

1. Upon the notification of an expected re-entry into the Earth's atmosphere of a space object containing a nuclear power source on board and its components, all States possessing space monitoring and tracking facilities, in the spirit of international cooperation, shall communicate the relevant information that they may have available on the malfunctioning space object with a nuclear power source on board to the Secretary-General of the United Nations and the State concerned as promptly as possible to allow States that might be affected to assess the situation and take any precautionary measures deemed necessary.

2. After re-entry into the Earth's atmosphere of a space object containing a nuclear power source on board and its components:

(a) The launching State shall promptly offer and, if requested by the affected State, provide promptly the necessary assistance to eliminate actual and possible harmful effects, including assistance to identify the location of the area of impact of the nuclear power source on the Earth's surface, to detect the re-entered material and to carry out retrieval or clean-up operations;

(b) All States, other than the launching State, with relevant technical capabilities and international organizations with such technical capabilities shall, to the extent possible, provide necessary assistance upon request by an affected State.

In providing the assistance in accordance with subparagraphs (a) and (b) above, the special needs of developing countries shall be taken into account.

Principle 8. Responsibility

In accordance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States shall bear international responsibility for national activities involving the use of nuclear power

sources in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that such national activities are carried out in conformity with that Treaty and the recommendations contained in these Principles. When activities in outer space involving the use of nuclear power sources are carried on by an international organization, responsibility for compliance with the aforesaid Treaty and the recommendations contained in these Principles shall be borne both by the international organization and by the States participating in it.

Principle 9. Liability and compensation

1. In accordance with article VII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and the provisions of the Convention on International Liability for Damage Caused by Space Objects, 4/ each State which launches or procures the launching of a space object and each State from whose territory or facility a space object is launched shall be internationally liable for damage caused by such space objects or their component parts. This fully applies to the case of such a space object carrying a nuclear power source on board. Whenever two or more States jointly launch such a space object, they shall be jointly and severally liable for any damage caused, in accordance with article V of the above-mentioned Convention.

2. The compensation that such States shall be liable to pay under the aforesaid Convention for damage shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf a claim is presented to the condition which would have existed if the damage had not occurred.

3. For the purposes of this principle, compensation shall include reimbursement of the duly substantiated expenses for search, recovery and clean-up operations, including expenses for assistance received from third parties.

Principle 10. Settlement of disputes

Any dispute resulting from the application of these Principles shall be resolved through negotiations or other established procedures for the peaceful settlement of disputes, in accordance with the Charter of the United Nations.

Principle 11. Review and revision

These Principles shall be reopened for revision by the Committee on the Peaceful Uses of Outer Space no later than two years after their adoption.

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4/ Resolution 2777 (XXVI), annex.